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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,301	04/06/2001	Shigeru Nakayama	4641-58305	6580

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EXAMINER

PYO, KEVIN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/828,301

Applicant(s)

NAKAYAMA ET AL.

Examiner

Kevin Pyo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10,21-32,34-37,44-50,52-54 and 56-77 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10,21-32,34-37,44-50,52-54 and 56-77 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Specification

1. The disclosure is objected to because of the following informalities: On page 4, line 24, "has" should be deleted. Applicant's cooperation is requested in correcting any additional errors of which applicant become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 32, 45, 57-59, 61-63, 67 and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 32, although a product claim that defines the claimed product (an optical element having an optical characteristic) in terms of the process by which it is made is proper, it is apparent from consideration of claim 21 that the process recited therein fails to establish any manufacture, i.e. the optical element having the optical characteristic is not transformed in any way by using the process of claim 21. Accordingly, no limitation on the product results from stating "measured using the method of claim 21" and it must be considered that any optical element having an optical characteristic is within the scope of product claim 32, and therefore the claim fails to particularly point out which optical elements are included and fails to distinctly claim the subject matter which applicant regard as his invention.

Claims 45, 57, 59, 61 and 63 are rejected on the analogous basis as that for claim 32.

Claims 58, 62, 67 and 68 are rejected by virtue of their dependency on a rejected claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8, 21-28, 32, 46-50, 64, 68, 69 and 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Wyant et al.

Regarding claims 1, 21, 46 and 47 Wyant et al shows in Fig.1 the following elements of applicant's claim: a) a light source (11) configured to produce a light flux; b) a light-flux optical system (the optical elements in Fig.1) situated relative to the light source and the target object and configured to (i) produce from the light flux a measurement-light flux (40) and a reference-light flux (37), (ii) direct the measurement-light flux to the target object (42) so as to cause the measurement-light flux to interact with the target object and thus acquire a wavefront profile corresponding to the optical characteristic of the target object, (iii) provide the reference-light flux with a standard wavefront (col.4, lines 32-37), and (iv) establish an interference between the reference-light flux and the measurement-light flux from the target object (col.4, lines 42-47); c) a phase-state changing device (32) situated and configured to change, relative to a standard, a phase state of at least one of the reference-light flux and the measurement-light flux from the target object; d) a detector (26) situated and configured to detect interference fringes produced by the interference at any of the various phase states; and e) a computer (29) connected to the detector and to the phase-state changing device (Fig.1), the computer being configured to produce, from the detected interference fringes produced at different respective phase states, data

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concerning respective phase distributions, and to calculate an average phase distribution (col.7, line 38-col.8, line 48).

Regarding claims 2, 22 and 49 Wyant et al shows in Fig.1 the phase-state changing device (32) is configured to change the phase state of the reference-light flux.

Regarding claims 3-6, 23-26, 48 and 50 Wyant et al discloses in col.12, lines 39-55 the idea of shifting phase of one or both of light beams (i.e. the reference-light beam and the measurement-light beam).

Regarding claims 7 and 27, the limitation therein is disclosed in col.12, lines 49-51.

Regarding claims 8 and 28, the limitation therein is disclosed in col.7, lines 59-61.

Regarding claim 32 and 68, as far as the claim is understood, an optical profiler of Wyant et al measures the surface profile of a test target (42).

Regarding claims 64, 69 and 74 the limitation therein is shown in Fig.1.

6. Claims 1, 21, 34, 46, 52, 57-63, 65, 67, 70-72, 75 and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al.

Regarding claims 1, 21 and 46, Suzuki et al shows in Fig.1 the following elements of applicant's claim: a light source (1); a light-flux optical system (4; col.2, lines 5-12); a phase-state changing device (10); a detector (11); and a computer (7).

Regarding claims 34, 65, 70, 71, 72, 75, and 76, the limitations therein are shown in Fig.1.

Regarding claims 52, 57-63 and 67, as far as the claim is understood, Suzuki et al discloses a wavefront aberration measuring apparatus and methods for a test lens (i.e. a projection lens; col.1, lines 6-10).

Claim Rejections - 35 USC § 103

7. Claims 9, 10, 29-31, 44, 56 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyant et al.

Regarding claims 9, 10, 29 and 30, the specific phase steps utilized would have been obvious to one of ordinary skill in the art in view of design requirements.

Regarding claims 31, 44, 56 and 66, the specific target object would have been obvious to one of ordinary skill in the art in view of the desired performance.

8. Claims 35-37, 53, 54, 73 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al.

Regarding claims 35-37, 53, 54, 73 and 77, the specific configuration utilized for providing a constant phase or distance would have been obvious to one of ordinary skill in the art since it only involves routine engineering skill.

Conclusion

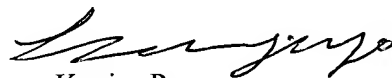
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Noguchi et al, Freischlad and Gemma et al are cited for disclosing an interferometer for measuring the surface profile.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Pyo whose telephone number is 703-308-4841. The examiner can normally be reached on Mon-Fri (with flexible hour), First Mon. off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 703-308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Kevin Pyo
Primary Examiner
Art Unit 2878

pkk
May 5, 2003